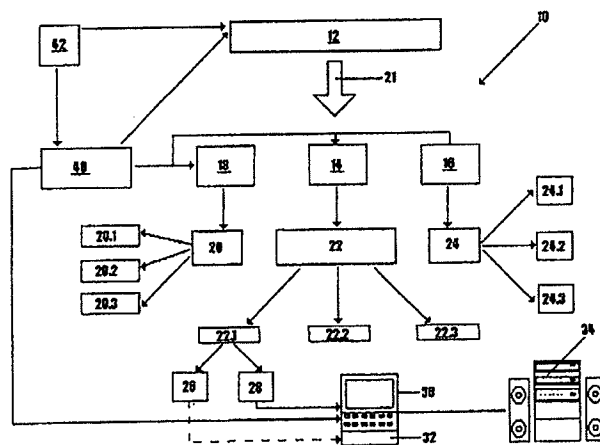




## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<b>(51) International Patent Classification <sup>7</sup> :</b> <b>G06F 17/60, G07F 17/16, G11B 20/00</b>	<b>A1</b>	<b>(11) International Publication Number:</b> <b>WO 00/07130</b> <b>(43) International Publication Date:</b> 10 February 2000 (10.02.00)
<b>(21) International Application Number:</b> PCT/ZA99/00056 <b>(22) International Filing Date:</b> 29 July 1999 (29.07.99) <b>(30) Priority Data:</b> 98/6868                      31 July 1998 (31.07.98)                      ZA <b>(71)(72) Applicant and Inventor:</b> GROBLER, Benjamin, Filmlalter [ZA/ZA]; 92 Soutpansberg Road, Riviera, 0084 Pretoria (ZA). <b>(74) Agents:</b> DUNLOP, Alan, J., S. et al.; Hahn & Hahn Inc., 222 Richard Street, Hatfield, 0083 Pretoria (ZA).		<b>(81) Designated States:</b> AE, AL, AM, AT, AT (Utility model), AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, CZ (Utility model), DE, DE (Utility model), DK, DK (Utility model), EE, EE (Utility model), ES, FI, FI (Utility model), GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).  <b>Published</b> <i>With international search report.</i>

(54) Title: DATA VENDING SYSTEM



## (57) Abstract

The invention provides a data vending system (10) including the storing data, such as digitised music and/or video and/or computer programs on one or more main computer i.e. the data depot (12). The data on the data depot (12) being indexed to be searchable in terms of index number, name of author, name of producer, title, content, cost, duration, theme, or the like. One or more vendors (14, 16, 18), at locations remote to the main computer of the data depot (12), are provided with data dispensing devices (20, 22, 24), able to communicate with the main computer by satellite link-up, by telephone or data line, by radio, or the like (21). The dispensing devices will typically be in the form of a local file server having a number of server stations (20.1, 20.2, 20.3, 22.1, 22.2, 22.3, 24.1, 24.2, 24.3), or terminals where a customer can search the depot (12) index and select data of his or her choice. Each item selected will have a code and a price.

**FOR THE PURPOSES OF INFORMATION ONLY**

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AL	Albania	ES	Spain	LS	Lesotho	SI	Slovenia
AM	Armenia	FI	Finland	LT	Lithuania	SK	Slovakia
AT	Austria	FR	France	LU	Luxembourg	SN	Senegal
AU	Australia	GA	Gabon	LV	Latvia	SZ	Swaziland
AZ	Azerbaijan	GB	United Kingdom	MC	Monaco	TD	Chad
BA	Bosnia and Herzegovina	GE	Georgia	MD	Republic of Moldova	TG	Togo
BB	Barbados	GH	Ghana	MG	Madagascar	TJ	Tajikistan
BE	Belgium	GN	Guinea	MK	The former Yugoslav Republic of Macedonia	TM	Turkmenistan
BF	Burkina Faso	GR	Greece			TR	Turkey
BG	Bulgaria	HU	Hungary	ML	Mali	TT	Trinidad and Tobago
BJ	Benin	IE	Ireland	MN	Mongolia	UA	Ukraine
BR	Brazil	IL	Israel	MR	Mauritania	UG	Uganda
BY	Belarus	IS	Iceland	MW	Malawi	US	United States of America
CA	Canada	IT	Italy	MX	Mexico	UZ	Uzbekistan
CF	Central African Republic	JP	Japan	NE	Niger	VN	Viet Nam
CG	Congo	KE	Kenya	NL	Netherlands	YU	Yugoslavia
CH	Switzerland	KG	Kyrgyzstan	NO	Norway	ZW	Zimbabwe
CI	Côte d'Ivoire	KP	Democratic People's Republic of Korea	NZ	New Zealand		
CM	Cameroon			PL	Poland		
CN	China	KR	Republic of Korea	PT	Portugal		
CU	Cuba	KZ	Kazakhstan	RO	Romania		
CZ	Czech Republic	LC	Saint Lucia	RU	Russian Federation		
DE	Germany	LI	Liechtenstein	SD	Sudan		
DK	Denmark	LK	Sri Lanka	SE	Sweden		
EE	Estonia	LR	Liberia	SG	Singapore		

5

## DATA VENDING SYSTEM

10

### Field of the Invention

This invention relates to a data vending system.

15

### Background to the Invention

The inventor is aware that presently copyright royalty losses are incurred due to unauthorised copying of data, such as music, videos, computer programs, and the like. This copying usually takes the form of one or more unauthorised copies being made from an original or authorised copy.

20

One of the reasons for the unauthorised copying is that consumers are unable to purchase just the data they want, and are often offered either a bundle including the data they require or they must do without.

25

A further reason for the copying is that recording media are freely available and that any person may record data on such media, without prior authorisation by the copyright owner or his licensee(s).

Yet a further reason for the unauthorised copying is the availability of data of the type mentioned above over the internet, for example, from music sites which allow the downloading of particular tracks of music either for free or for payment. Once the music has been downloaded from the internet by a user neither the internet site operator nor the owner of the copyright in such data has any control over its further copying.

In addition to the above problems, the authorised end user is also limited by present data distribution systems in that if the data is lost or damaged the authorised user has to again purchase an authorised copy from the copyright owner or a licensed vendor. This problem is particularly acute with data carried on magnetic or optical media such as tapes, diskettes, compact disks (CD's) and Digital Video Disks (DVD's), which are prone to loss and/or damage.

### **Summary of the Invention**

Thus, according to a first aspect of the invention, there is provided a data vending system including:

- a data depot;
- a data dispensing device in communication with the depot;
- a recordable data carrier configured for recording data from the data dispensing device; and
- a database for storing user information for each recordable data carrier.

The data depot may include a computer located at a remote location on which data to be vended is stored or from which data to be vended is routed.

The data depot may have the data stored thereon indexed. The indexing may be by index number, name of author, name of producer, title, content, cost, duration, theme, or the like.

5

The index may be searchable.

The data depot may be a store of digitised or analogue music, video, games, information, or computer programs.

10

The data dispensing device may be in the form of a computer terminal in data transfer communication with the depot. Conveniently such data transfer may be by dedicated data lines, telephone lines, satellite link-up, radio transmission, or the like.

15

The computer terminal may be provided with localised data storage for storing an index of available data. The index may be a copy of a portion of the data depot index at a given time. The index on the computer terminal may be updated periodically from the data depot, typically when data is transferred between the computer data depot and the computer terminal to complete a data vending transaction.

20

The computer terminal may be provided with data writing means for writing data to a data carrier. The computer terminal may be configured to download data from the depot and transfer the data to the data carrier with or without storing it locally for later retrieval.

25

The computer terminal may include payment means for processing payment for the data vending transaction.

The payment means may include a key pad configured to accept an identification code linked to an account to which the transaction may be debited.

5

The computer terminal may include a card reader for accepting payment by banking cards, such as credit cards, debit cards, savings cards, and the like.

The data carrier may be a single or multiple use recordable data carrier.

10

The data carrier may include key means, for example, a hardware or software key linked to a microprocessor. The data carrier may thus be activated and deactivated for receiving data and/or releasing data by means of the key means.

15

The data dispensing device may be provided with a verification mechanism for verifying the authenticity of the key means.

The key means may be located on the data dispensing device and a code may be required to authenticate a user. The key means may be in the form of a code at a remote location, the data dispensing device being communicable with the remote location for verification of the code input by a user at the data dispensing device.

20

Equally the verification mechanism and/or the key means may be at least partially located on the data depot.

25

The recordable data carrier may be configured to receive data only from a data dispensing device authorised for a particular data carrier or a particular class of data carrier.

30

The recordable data carrier may be configured to be read by a data carrier reader authorised for a particular data carrier or a particular class of data carrier.

5

However, the recordable data carrier may be configured for receiving data from certain authorised data dispensing devices but to be read by any suitable reader, for example, a home entertainment centre.

10 The recordable data carrier may be configurable, through the data recorded thereon or otherwise, to permit reading of the data stored thereon for a predetermined period of time only, whereafter the data is either marked as stale and later deleted, or deleted immediately.

15 The above function may be controlled from a remote location by radio, satellite, data or telephone cable, or the like. This functionality will permit the so called renting of data, rather than purchasing the use thereof for an indefinite period, and is particularly suited to games, music and video data.

20 The database for storing user information for each recordable data carrier may contain demographic data about the user/owner of the recordable data carrier, data purchased (either cumulatively or periodically, by title, by artist, etc), data rented and the rental period (either cumulatively or periodically, by title, by artist, etc), clients normal requirements, clients payment records,  
25 royalties payable to the copyright owner, favourite data, and the like. It will be clear to those skilled in the art that the above list is not exhaustive and that any relevant data may be stored in such database.

The database may be stored in whole or in part on the data depot, on the  
30 data dispenser, on the data carrier, or on a combination of any of the aforementioned i.e. a decentralised database.

According to a second aspect of the invention, there is provided a method of vending data, the method including:

- storing data to be vended;
- dispensing desired data packages from the depot;
- 5 - recording the dispensed data to a data carrier; and
- databasing details of the record carrier.

According to a further aspect of the invention there is provided a vending booth including a data dispensing device in communication with a data depot,  
10 the data dispensing device being configured for dispensing data to a recordable data carrier configured for recording data from the data dispensing device and for exchanging data regarding the dispensed data with a database for storing user information for each recordable data carrier.

15 The booth may include electronic payment means in the form of a card or token reader configured to debit an account of a user responsive to the dispensing of data from the data dispensing device on the recordable data carrier.

20 The booth may be in the form of a vending machine type apparatus, similar to those currently used for other transactions.

### **Description of the Drawings**

The invention will now be described, by way of example only, with reference  
25 to the accompanying flow diagram.

A data vending system 10, broadly in accordance with the invention, includes the storing data, such as digitised music and/or video and/or computer programs on one or more main computer i.e. the data depot 12. The data on  
30 the data depot 12 being indexed to be searchable in terms of index number, name of author, name of producer, title, content, cost, duration, theme, or the like.



One or more vendors 14, 16, 18, at locations remote to the main computer of the data depot 12, are provided with data dispensing devices 20, 22, 24, able to communicate with the main computer by satellite link-up, by telephone or data line, by radio, or the like 21. The dispensing devices will typically be in the form of a local file server having a number of server stations 20.1, 20.2, 20.3, 22.1, 22.2, 22.3, 24.1, 24.2, 24.3, or terminals where a customer can search the depot 12 index and select data of his or her choice. Each item selected will have a code and a price.

Thus a list of selections will have an overall price which the user tenders. The terminal may include a card reader 26 for accepting payment by banking cards, such as credit cards, debit cards, savings cards, and the like.

The terminal 20.1, 20.2, 20.3, 22.1, 22.2, 22.3, 24.1, 24.2, 24.3, is provided with data writing means 28 for writing data to a data carrier 30.

The terminal 20.1, 20.2, 20.3, 22.1, 22.2, 22.3, 24.1, 24.2, 24.3, is configured to download data from the depot 12 and transfer them to the data carrier 30 with or without storing it locally on the terminal 20.1, 20.2, 20.3, 22.1, 22.2, 22.3, 24.1, 24.2, 24.3, for later retrieval.

The data carrier 30 may be a single or multiple use recordable data carrier, such as a removable hard disk, a CD-ROM, a DVD, an eeprom, or the like. One envisaged embodiment is a cassette holding a number of CD-ROMs and a controller for performing the other functions, and managing the data on the CD-ROMs.

The data carrier 30 includes key means 32, for example, a hardware or software key linked to a microprocessor. The data carrier 30 is thus activated and deactivated for receiving data by means of the key means 32. Typically this functionality will be performed with the use of PIN (Personal Identification Numbers) or passwords, or the like, cell-phone fashion.

The data dispensing device 20, 22, 24 and/or the data depot 12 is provided with a verification mechanism for verifying the authenticity of the key 32.

- 5    The recordable data carrier 32 is configured to receive data only from a data dispensing device 20, 22, 24, authorised for a particular data carrier 32 i.e. at the premises of an authorised vendor 14, 16, 18, and to be read by any suitable reader, for example, a home entertainment centre 34.
- 10   Once a selection has been paid for the data corresponding to that selection is downloaded from the main computer of the data depot 12, via the terminal 20.1, 20.2, 20.3, 22.1, 22.2, 22.3, 24.1, 24.2, 24.3, onto the data carrier 30.

- The vendor 14, 16, 18 thus does not require large data storage facilities nor,
- 15   as with conventional record bars, video shops and software outlets, large stock holding tying up floor space and capital.

- The recordable data carrier 30 is configurable, through the data recorded thereon or otherwise, to permit reading of the data stored thereon for a
- 20   predetermined period of time only, whereafter the data is either marked as stale and later deleted, or deleted immediately. The above function is monitored from the dispensing terminal 20.1, 20.2, 20.3, 22.1, 22.2, 22.3, 24.1, 24.2, 24.3, and requires periodic communication with a terminal 20.1, 20.2, 20.3, 22.1, 22.2, 22.3, 24.1, 24.2, 24.3, to keep the data carrier alive.
- 25   This permits tight control to be exercised over the copyright in the data on the data carrier 30 as any unauthorised data on the data carrier 30 can be deleted by the terminal 20.1, 20.2, 20.3, 22.1, 22.2, 22.3, 24.1, 24.2, 24.3, during the periodic communication.

This functionality permits the so called renting of data, rather than purchasing the use thereof for an indefinite period, and is particularly suited to music and video data as well as ensuring regular contact between the  
5 vendor and the user for sales purposes.

A database 40 for storing user information for each recordable data carrier 30 contains demographic data about the user/owner of the recordable data carrier, data purchased (either cumulatively or periodically, by title, by artist,  
10 etc), data rented and the rental period (purchased (either cumulatively or periodically, by title, by artist, etc), clients normal requirements, clients payment records, royalties payable to the copyright owner, favourite data, and the like.

15 Thus, a copyright owner 42 may access the database 40 to determine the royalties collected so far and due to him, the client base he has, changing trends, and the like.

The database 40 may be stored on the data depot 12, on the data dispenser  
20 20.1, 20.2, 20.3, 22.1, 22.2, 22.3, 24.1, 24.2, 24.3, on the data carrier 30, or on a combination of any of the aforementioned i.e. a decentralised database.

The inventor envisages that the system could be operated as a franchise operation with a main computer operator i.e. the wholesaler, and a number of  
25 vendors i.e. the retailer, much like present record bars and the like.

The inventor believes that the invention is advantageous in that it will permit a user who has once purchased some data, and has subsequently lost the data carrier or who has deleted the relevant data, to re-record the data  
30 without repurchasing it.

Furthermore, the inventor believes that it is an advantage of the invention that a user can purchase or rent the data e.g. music, video etc. for a predetermined period of time, and pay therefor accordingly with the copyright  
5 owner being credited with royalties accordingly.

**Claims**

1. A data vending system including:
  - a data depot;
  - 5 - a data dispensing device in communication with the data depot;
  - a recordable data carrier configured for recording data from the data dispensing device; and
  - a database for storing user information for each recordable data carrier.
- 10 2. A data vending system as claimed in claim 1, wherein the data depot includes a computer located at a remote location on which data to be vended is stored.
- 15 3. A data vending system as claimed in claim 1, wherein the data depot includes a computer located at a remote location from which data to be vended is routed.
- 20 4. A data vending system as claimed in any one of the preceding claims wherein the data depot has the data stored thereon indexed.
- 25 5. A data vending system as claimed in claim 4, wherein the indexing is by one or more indexing keys selected from an index number, name of author, name of producer, title, content, cost, duration, theme, or the like.
6. A data vending system as claimed in claim 5 wherein the index is searchable from the data dispensing device.
- 30 7. A data vending system as claimed in claim 5 or claim 6, wherein the index is searchable from the recordable data carrier.

8. A data vending system as claimed in any one of the preceding claims,  
wherein the data depot is a store of one or more data type selected  
from digitised or analogue music, video, games, information, and  
computer programs.
9. A data vending system as claimed in any one of the preceding claims,  
wherein the data dispensing device is in the form of a computer  
terminal in data transfer communication with the data depot by means  
of data transfer means.
10. A data vending system as claimed in claim 9, wherein the data transfer  
means is in the form of one or more of dedicated data lines, telephone  
lines, satellite link-up, radio transmission, or broadband cable.
11. A data vending system as claimed in claim 9 or claim 10, wherein the  
computer terminal is provided with localised data storage for storing an  
index of available data.
12. A data vending system as claimed in any one of claims 9 to 11,  
wherein the computer terminal is provided with data writing means for  
writing data to a data carrier.
13. A data vending system as claimed in any one of claims 9 to 12,  
wherein the computer terminal is configured to download data from the  
depot and transfer the data to the data carrier with or without storing it  
locally for later retrieval.
14. A data vending system as claimed in any one of claims 9 to 13,  
wherein the computer terminal includes payment means for processing  
payment for the data vending transaction.

15. A data vending system as claimed in claim 14, wherein the payment means includes a key pad configured to accept an identification code linked to an account to which the transaction may be debited.
- 5 16. A data vending system as claimed in claim 14 or claim 15, wherein the computer terminal includes a card reader for accepting payment by banking cards, such as credit cards, debit cards, savings cards, and the like.
- 10 17. A data vending system as claimed in any one of claims 14 to 16, wherein a royalty payment to the copyright owner and/or licensee is included in the transaction amount.
- 15 18. A data vending system as claimed in claim 17, wherein the royalty payment is transferred automatically to the copyright owner and/or licensee
19. A data vending system as claimed in any one of the preceding claims, wherein the data carrier is a single use recordable data carrier.
- 20 20. A data vending system as claimed in any one of the preceding claims, wherein the data carrier is a multiple use recordable data carrier.
- 25 21. A data vending system as claimed in any one of the preceding claims, wherein the data carrier includes key means for activating and/or deactivating the data carrier for receiving data and/or releasing data.
- 30 22. A data vending system as claimed in claim 21, wherein the key means includes a hardware or software key linked to a microprocessor operatively associated with the data carrier.

23. A data vending system as claimed in claim 22, wherein the data dispensing device is provided with a verification mechanism for verifying the authenticity of the key means.
- 5 24. A data vending system as claimed in any one of claims 21 to 23, wherein the key means is located on the data dispensing device and a code is required to be inputted into the data dispensing device to authenticate a user prior to data being transferred from the data dispensing device to the data carrier.
- 10 25. A data vending system as claimed in any one of claims 21 to 23, wherein the key means is in the form of a code at a remote location, the data dispensing device being communicable with the remote location for verification of the code input by a user at the data dispensing device.
- 15 26. A data vending system as claimed in any one of claims 21 to 25, wherein the verification mechanism and/or the key means are at least partially located on the data depot.
- 20 27. A data vending system as claimed in any one of the preceding claims, wherein the recordable data carrier is configured to receive data only from a data dispensing device authorised for a particular data carrier.
- 25 28. A data vending system as claimed in any one of the preceding claims, wherein the recordable data carrier is configured to receive data only from a data dispensing device authorised for a particular class of data carrier.

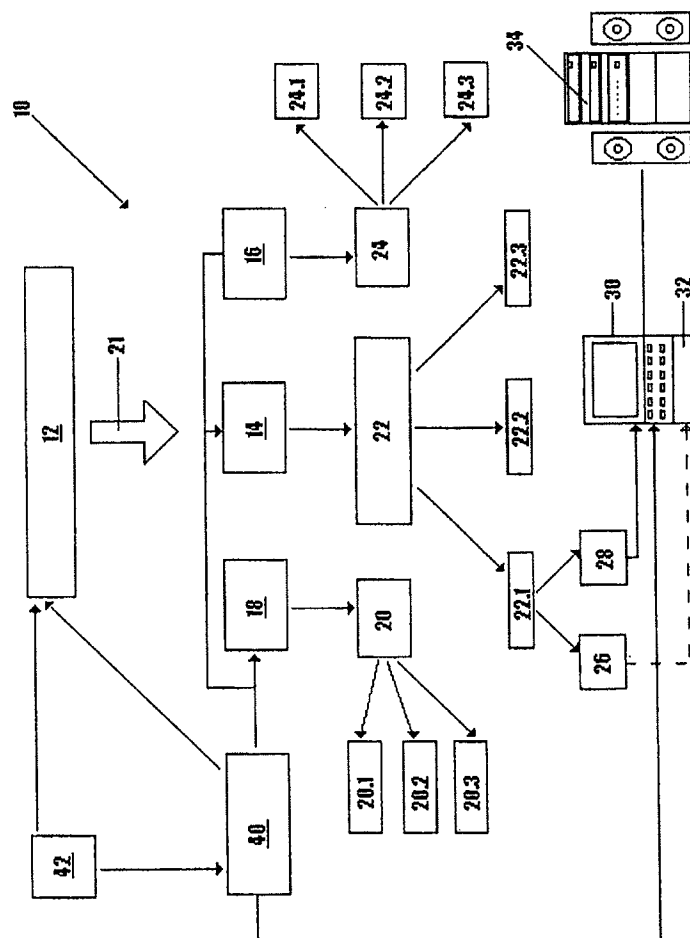


29. A data vending system as claimed in any one of the preceding claims, wherein the recordable data carrier is configured to be read only by a data carrier reader authorised for a particular data carrier.
- 5 30. A data vending system as claimed in any one of the preceding claims, wherein the recordable data carrier is configured to be read only by a data carrier reader authorised for a particular class of data carrier.
- 10 31. A data vending system as claimed in any one of the preceding claims, wherein the recordable data carrier is configured for receiving data only from certain authorised data dispensing devices but to be read by any suitable reader.
- 15 32. A data vending system as claimed in any one of claims 27 to 31, wherein the recordable data carrier is configured by the provision of a code which is scrambled periodically when the data carrier is in data communication with the data depot.
- 20 33. A data vending system as claimed in any one of the preceding claims, wherein the recordable data carrier is configurable, through the data recorded thereon or otherwise, to permit reading of the data stored thereon for a predetermined period of time only, whereafter the data is either marked as stale and later deleted, or deleted immediately, or
- 25 scrambled.
- 30 34. A data vending system as claimed in claim 30, wherein the marking of the data as stale and/or the deletion and/or scrambling thereof is initiated from a remote location by radio, satellite, data or telephone cable, or the like.

35. A data vending system as claimed in any one of the preceding claims, wherein the database for storing user information for each recordable data carrier contains data selected from the group including  
5 demographic data about the user/owner of the recordable data carrier, data purchased (either cumulatively or periodically, by title, by artist, etc), data rented and the rental period (either cumulatively or periodically, by title, by artist, etc), clients normal requirements, clients payment records, royalties payable to the copyright owner, and  
10 favourite data.
36. A data vending system as claimed in any one of the preceding claims, wherein a portion of the database is stored on one or more of the data depot, the data dispenser, and the data carrier.
- 15 37. A method of vending data, the method including:
- storing data to be vended;
  - dispensing desired data packages from the depot;
  - recording the dispensed data to a data carrier; and
  - 20 - databasing details of each data carrier.
38. A vending booth including a data dispensing device in communication with a data depot, the data dispensing device being configured for dispensing data to a recordable data carrier configured for recording  
25 data from the data dispensing device and for exchanging data regarding the dispensed data with a database for storing user information for each recordable data carrier.
39. A vending booth as claimed in claim 38, wherein the booth includes  
30 electronic payment means in the form of a card or token reader configured to debit an account of a user responsive to the dispensing of data from the data dispensing device on the recordable data carrier.

40. A vending booth as claimed in claim 38 or claim 39, wherein the booth is in the form of a vending machine type apparatus, similar to those currently used for other vending transactions, adapted to vending data by having a data writing means provided thereon.
- 5
41. A data vending system substantially as herein described and illustrated.
42. A method of vending data, substantially as herein described and illustrated.
- 10
43. A vending booth, substantially as herein described and illustrated.
44. A new data vending system, a new method of vending data, or a new vending booth substantially as herein described.
- 15

1/1



# INTERNATIONAL SEARCH REPORT

International Application No

.../ZA 99/00056

A. CLASSIFICATION OF SUBJECT MATTER  
IPC 7 G06F17/60 G07F17/16 G11B20/00

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
IPC 7 G06F G11B G07F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	GB 2 305 339 A (ACKROYD ET AL) 2 April 1997 (1997-04-02) the whole document ---	1-44
X	EP 0 649 121 A (INTERNATIONAL BUSINESS MACHINES CORPORATION) 19 April 1995 (1995-04-19) page 4, line 13 -page 6, line 43 page 15, line 4 -page 17, line 46 page 41, line 8 -page 44, line 4 ---	1-44
A	US 4 528 643 A (FRENEY, JR.) 9 July 1985 (1985-07-09) the whole document ---	1-44
A	WO 97 30425 A (GHISOLFI) 21 August 1997 (1997-08-21) the whole document ---	1-44
-/-		

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

### \* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance  
"E" earlier document but published on or after the international filing date  
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)  
"O" document referring to an oral disclosure, use, exhibition or other means  
"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention  
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone  
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.  
"&" document member of the same patent family

Date of the actual completion of the international search

22 November 1999

Date of mailing of the international search report

26/11/1999

Name and mailing address of the ISA

European Patent Office, P. B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl.  
Fax: (+31-70) 340-3016

Authorized officer

Abram, R

# INTERNATIONAL SEARCH REPORT

International Application No

PCT/ZA 99/00056

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>GB 2 199 984 A (BAI PUBLISHERS)  20 July 1988 (1988-07-20)  page 1, line 9 -page 2, line 2  page 3, line 3 - line 8  page 4, line 1 - line 19  page 9, line 7 -page 10, line 10  -----</p>	1-44

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PL/ZA 99/00056

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
GB 2305339	A	02-04-1997	NONE	
EP 649121	A	19-04-1995	JP 7175868 A	14-07-1995
			JP 10207965 A	07-08-1998
			KR 143358 B	17-08-1998
			US 5734719 A	31-03-1998
US 4528643	A	09-07-1985	EP 0195098 A	24-09-1986
			AT 57287 T	15-10-1990
WO 9730425	A	21-08-1997	IT MI960289 A	18-08-1997
GB 2199984	A	20-07-1988	US 5041921 A	20-08-1991
			CA 1327395 A	01-03-1994
			DE 3800065 A	24-11-1988
			FR 2611299 A	26-08-1988
			JP 63261589 A	28-10-1991
			US 5418654 A	23-05-1995
			US 5502601 A	26-03-1996
			US 5900830 A	04-05-1999
			US 5233477 A	03-08-1993
			US 5365381 A	15-11-1994
			US 5021893 A	04-06-1991